

## REMARKS

Claims 1-53 are pending in the application. Claims 1-53 are rejected.

Claims 54-62 have been newly added. No new matter is entered.

The claims have been amended to clarify applicant's invention.

With regard to the new claims, once the Examiner reviews these claims, if an interview would help to advance prosecution, the Examiner is invited to telephone applicant's representative.

### REJECTIONS UNDER 35 U.S.C. § 101

Claims 1 and 2 have been rejected under 35 U.S.C. § 101 as claiming a mathematical formula. Claims 1 and 2 have been amended to embed the limitation in hardware. It is respectfully requested the rejection be withdrawn.

### REJECTIONS UNDER 35 U.S.C. § 103

Claims 1 – 53 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' admitted prior art (AAPA) in view of Lin et al.

Claims 1, 2, 3, 10, 17 – 24, 31 – 32, 35 – 36, 43, 46 and 49 are rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Azuma et al., and also as being unpatentable over AAPA in view of "Turbo Code ..." to Yamaguchi et al., and as being unpatentable over AAPA in view of Karasawa et al.

Claims 1, 2, 3, 10, 18 – 20, 23 – 24, 31- 32, 35 – 36, 43, 46 and 49 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Karasawa in view of Yamaguchi and "Two-Dimensional Interleaving ..." to de Almeida et al., and as being unpatentable over Karasawa in view of Azuma and de Almeida.

Applicants respectfully traverse these rejections for at least the following reasons.

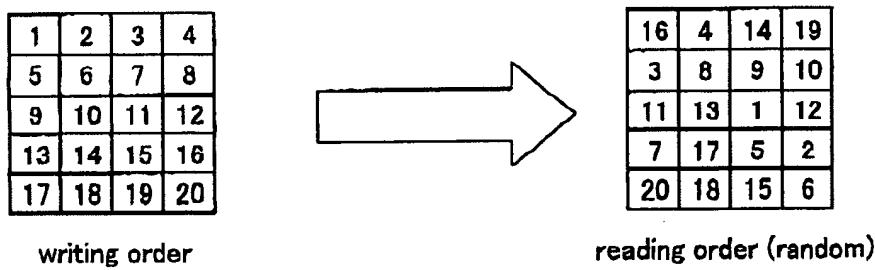
Applicant's independent claims disclose a method and apparatus of interleaving and de-interleaving data. The data is rearranged by interchanging rows of the matrix according to a predetermined order, and then by interchanging columns of the matrix according to a predetermined order.

By first interleaving at least one of rows and columns, a data stream has its bits effectively disbursed for transmission. Because of applicant's unique combination of features an advantage over the prior art is provided where the complexity and cost of interleaving circuitry and algorithms is substantially reduced over conventional interleaving/de-interleaving methods.

It is respectfully submitted that this unique combination of feature is not disclosed in the cited combination of references and further that even if the features were disclosed in the cited combination of references, there is no suggestion which would lead one skilled in the art to make such a combinations of prior art. Thus even if all the elements were present in the cited references, it is well-established that a combination of limitations, some of which separately may be known, may be a new combination of limitations which is nonobvious under the condition of 35 U.S.C. 103.

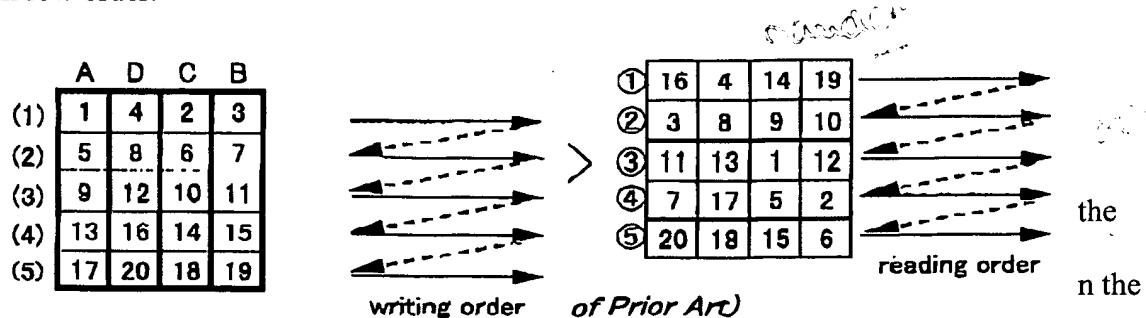
Moreover, "an examiner may often find every element of a claimed invention in the prior art." In re Rouffet, 47 USPQ3d 1453, 1457 (Fed. Cir. 1998) (reversing PTO obviousness rejection based on lack of suggestion or motivation to combine reference). Therefore even if every element of a claimed invention is in the combined prior art there must be some suggestion or motivation to combine the references. "Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form must nevertheless be 'clear and particularity.'" In re Dembiscak, 175 F.3d 994, 999 (CAFC 1999).

The only such suggestion provided has been from applicant's own disclosure, which is improperly being used against the applicant. Applicant discloses several conventional interleaving/de-interleaving methods however none of these methods suggests the unique features of the claimed invention. The cited references generally disclose interleaving/de-interleaving methods and algorithms however again none suggests the combination of features found in applicant's claims nor any suggestion that such methods may be combined with the cited AAPA.



*(Corresponds to FIG.23 of Prior Art)*

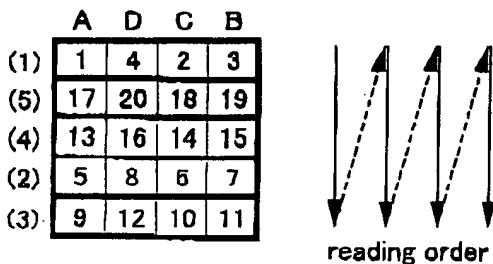
AAPA describes several conventional interleaving/de-interleaving methods. For example, as described with reference to Applicants' Fig. 22, one prior art method simply writes data to a matrix in row order and reads the data in column order. As described with reference to Applicants' Fig. 23, another prior art method randomly reorders cell data in the matrix, and randomly the re-ordered data. A third prior art method described with reference to Applicants' Fig. 24 randomly writes data to cells of the matrix and reads data in row order.



matrix without changing the value of cell data in each row. Then, as illustrated for

example in Applicants' Figs. 8 and 9, column data is interchanged in the matrix without

changing the order of cell data in each column, and data is read from the matrix in column order.



Unlike Applicants claimed apparatus and method, none of AAPA and the cited references suggest or otherwise disclose a method of interleaving/de-interleaving in which rows of a matrix are first reordered without changing the order of cell data in each row, and columns are then reordered without changing the order of cell data in each column, in order to produce cell data that has been effectively dispersed. *no in claims  
and now  
clear*

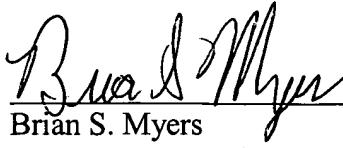
Applicants' claimed method provides the strong advantage of providing rearranged cell data that is highly resistant to burst errors in a manner that can be implemented by relatively simple circuits and algorithms.

Please charge the amount of \$678.00 for extra independent claims and dependent claims to Deposit Account 50-1290.

In view of the remarks set forth above, this application is in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,

  
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